



# Coevolution of relief and landslides on a volcanic landscape. The bassin of Puy-en-Velay, Massif central, France

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# COEVOLUTION OF RELIEF AND LANDSLIDES ON A VOLCANIC LANDSCAPE\*

## The bassin of Puy-en-Velay, Massif central, France



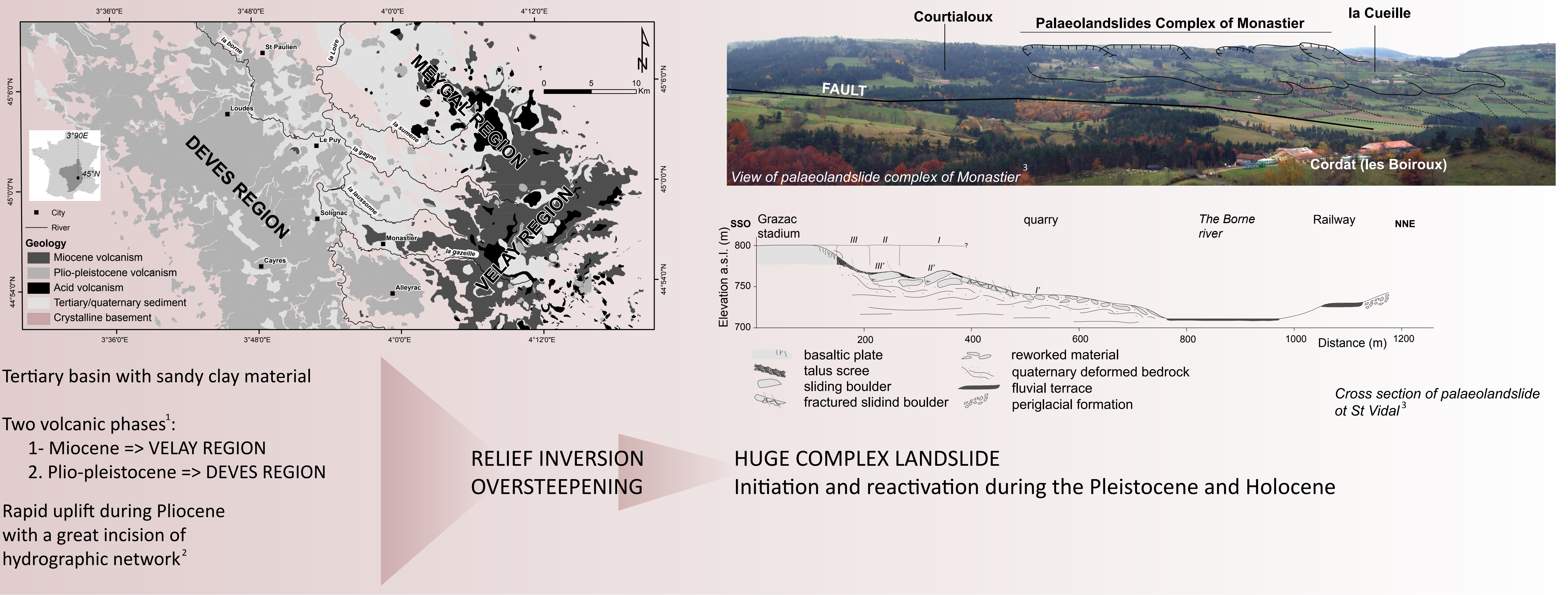
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- CONTEXT AND PHILOSOPHY OF THE RESEARCH
- . 20 years ago, the symposium "Morphogenic rythms in Volcanic Domain" at Clermont-Ferrand
  - . PhD Thesis about the landslide hazard mapping in the bassin of the Puy-en-Velay (Massif central, France)
  - . Linking the temporal short scale of engineering geology with the temporal long term of relief evolution

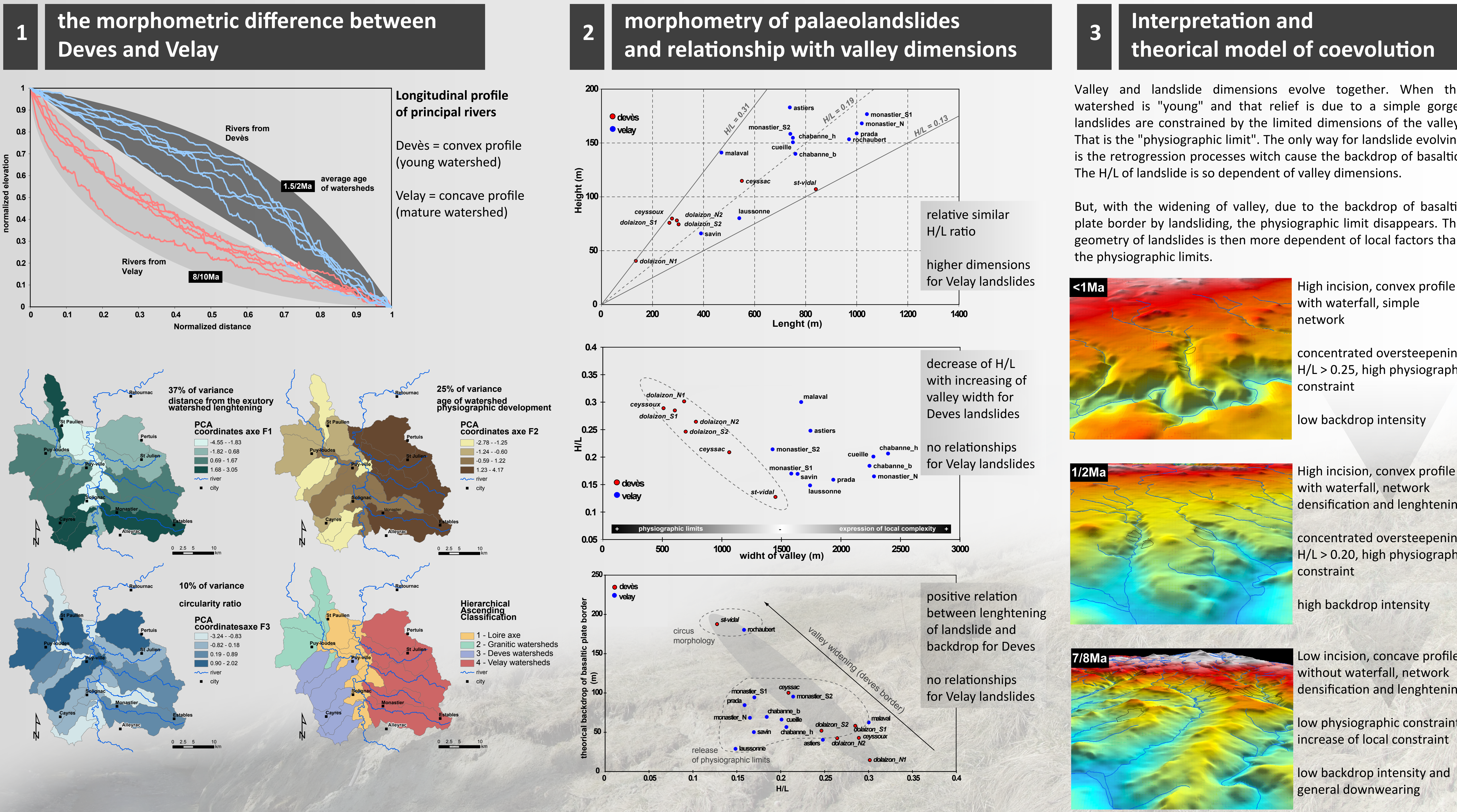
HOW VALLEYS AND LANDSLIDES EVOLVED TOGETHER ?

- METHODOLOGY
- . Morphometric analysis of 19 palaeolandslides
  - . Morphometric analysis of 22 watersheds by mean of multivariate statistics (PCA and HAC)
  - . Dating of basaltic tables as a chronological indication of the beginning of a new erosion cycle (bibliography)

### STUDY AREA AND PALAEOLANDSLIDES



### RESULTS AND INTERPRETATION



Acknowledgement

Thanks to Emmanuelle Defive for the numerous discussions we had on the topic

\* in reference to A. Jefferson, G.E. Grant, S.L. Lewis and S.T. Lancaster (2010) - Coevolution of hydrology and topography on a basalt landscape in Oregon Cascade Range, USA. *Earth Surface Processes and Landforms*, 35, 803-816

1 - Mergoil J. and Boivin P. (1993) - Le Velay, son volcanisme et les formations associées : notice à la carte au 1/100000. *Géologie de la France*, 3, 96p.

2 - Defive E. (1996) - L'encaissement du réseau hydrographique dans le bassin supérieur de la Loire - contribution à l'étude des rythmes d'évolution géomorphologique en moyenne montagne volcanisée. Thèse de doctorat, Paris I, Panthéon-Sorbonne, 551 p.

3 - Poiraud A. and Defive E. (2011) - Morphology and geomorphological significance of relict landslides in the Tertiary basin of Puy-en-Velay (Massif Central, France). *Géomorphologie : relief, processus, environnement*, 3,